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1255 unbound pamphlets, which would probably form 125 volumes, making 23,186 volumes in all, exclusive of duplicates and the libraries of sections. If these be added the total will reach 25,495 volumes.¹

Portraits in oil of Jacob Gilliams, M.D., and John Speakman, two of the founders of the Academy, were presented by Dr. Jas. S. Gilliams and Thos. Say Speakman respectively.

It will be seen by reference to the annual list of additions to the library how deeply the Academy is indebted to Mr. Isaiah V. Williamson for his munificent gift. Many of the most valuable publications of the last two or three years have been obtained by means of this fund, and the library is consequently better supplied with the recent literature of natural history than it has been since the death of Dr. Thos. B. Wilson. Much, however, remains to be added before the library in many of its sections can be considered as approaching a state of completeness, and it is earnestly desired that specialists will furnish the titles of such works as may be lacking in their departments. A catalogue of current scientific books already begun for the use of the Library Committee will be continued and kept as complete as possible. It is hoped that the means at the disposal of the committee are now sufficient to enable it to authorize the ordering of all approved books, while the titles of those works which it is not thought desirable to purchase immediately, will yet be kept for reference in the future.

All of which is respectfully submitted,

EDW. J. NOLAN, *Librarian.*

REPORT OF THE CURATORS FOR 1876.

The removal of the Museum of the Academy from the former building to the one now occupied, was completed before the close of the last year; the removal of the library immediately followed, and was completed in the first week of January of the present year. The first meeting of the Academy was held in the new building on the 11th of January.

Through the able superintendence and incessant labor of my colleagues, Messrs. Tryon and Parker, aided by Dr. James A. Ogden, Miss Sarah P. Monks, John A. Ryder, Russel Hill, and others, the different collections were so far arranged in their

¹ The increase of the year makes the aggregate of the library November 30, 1876, about 26,356 volumes.

respective places that the Museum was opened for exhibition to the public on the first of May. From that time to the present it has been open to visitors daily except on Saturday and Sunday. Since then, also, the regular and systematic arrangement of the collections of the Museum has continued in the usual manner.

Those departments of the Museum under the charge of special sections of the Academy have been equally well attended to in the arrangement of their appropriate collections. On the condition of these and the additions thereto during the year, I refer to the reports of the Conservators of the Sections.

In July, I regret to say, Mr. Tryon resigned his position as Curator. Dr. H. C. Chapman was appointed to fill the vacancy. Since that time the Museum has been mainly under the superintendence of Mr. Parker, whose services have proved so valuable that I hope the Academy may secure their continuance.

Mr. John A. Ryder has arranged the mammalian collection, and affixed labels when required. The crania of mammals are partially arranged and labelled.

The collection of human crania has been rearranged. (Mr. Parker reports the following skulls as missing: Nos. 210, 215, 223, 224, 227, 232, 401, 568, 719, 736, 843, 872, 878, 898, 981, 1039, 1042, 1050, 1067, 1236, 1246, 1282, 1348, 1414, 1479, 1485, 1557—in all 27.)

The collection of mammalian and bird skins has been thoroughly examined.

The ornithological collection has been arranged in the cases by Dr. James A. Ogden, Miss Sarah P. Monks, and Mr. Russel Hill. Miss Monks has identified, labelled, and catalogued the species of twenty-three families; and, in addition, has arranged and attached the generic and family names to those identified by her the previous year. Mr. Spencer Trotter has identified the species of the family Sylvicolidae.

Mr. W. G. Freedley is arranging and labelling the collection of bird's eggs.

The alcoholic specimens of the Museum have received due attention.

The cretaceous vertebrate fossils have been carefully gone over and placed in a condition to prevent their destruction through the decomposition of the sulphide of iron with which they are impregnated.

The invertebrate fossils have been partially arranged by Mr. Russel Hill, under the supervision of Mr. Wm. M. Gabb.

Most of the specimens donated, deposited, and purchased during the year have been labelled and arranged in their appropriate places.

(Several valuable specimens of minerals are missing from the collection.)

The contributions to the Museum during the year are as follows:—

Mammals.—A mounted skeleton of the Giraffe, 18 feet high, a fine specimen from Africa, purchased in London in 1875, presented by Wm. S. Vaux and Henry C. Gibson.

A Dugong, in alcohol, presented by Mr. John Ching, Wide Bay, Queensland, through Mr. Angus Mackay, Commissioner of Queensland.

Two skeletons of Marmoset, presented by Dr. Ed. Hartshorne. A squirrel, from Mexico, presented by the Zoological Society. A monkey, *Semnopithecus entellus*; a leopard, *F. pardus*; a Sun bear, *Helarctos eurypilus*; and a *Zalophus Gillespii*, deposited by O. B. Gross.

The following were also presented: a foetal pig, by John Krider; a foetal kitten, by C. F. Parker; a mouse with fungus growth, by P. F. Wells; a hydrocephalic skull of a calf, by Mrs. A. A. Crawford; and an irregular osteo-dentinal growth from the tooth of a sperm whale, by S. Powel.

Birds.—A black-throated quail, *Ortyx virginianus* var. *Hoopesii*, and a Trumpeter Swan, *Cygnus americanus*, presented by John Krider. A Massena partridge, *Cyrtonyx massena*, from Neuces R., Texas, presented by Lieut. A. C. Markley, U. S. A. A young heron, from New Jersey, presented by John Mays. An albino King bird, from New Jersey, presented by George W. Earle. Four bird skins, presented by John Wagner, through the Zoological Society.

Ten specimens, five species of bird skins, from Demarara, presented by Col. P. Figgelmesy, U. S. Consul, Demarara.

A finely mounted American eagle, from Arkansas, presented by Dr. George W. Lawrence, Commissioner.

The following were also presented: Five eggs of the Sage fowl, by Dr. J. Van A. Carter; three eggs of the Jew bird, *Crotophaga*, from San Domingo, by Wm. M. Gabb; three eggs of *Larus argen-*

tatus, by C. Mann; a nest of the Oriole, by Thos. L. Cernea; and a nest, by S. S. Haldeman.

A *Cygnus olor* was deposited by O. B. Gross.

Reptiles, Amphibians, and Fishes.—Fourteen jars of reptiles from British Guiana, presented by Mr. Gilbert, of Demarara, through Mr. A. A. Outerbridge, Commissioner for British Guiana. Eight species of reptiles, from Trinidad, presented by Col. P. Figgelmesy. There were also presented a small collection of reptiles, from San Domingo, by Wm. M. Gabb; and another from Port au Prince, Hayti, by Thomas Bland. Two snakes, from Pocono, by T. Wagner and R. Fulmer. Several salamanders, from Brush Mt., by Rev. H. C. McCook. A terrapin, by Mr. Mather; and several turtle eggs, by J. A. Ryder.

Forty-two specimens, forty-one species of fishes, from South America, collected by the Hassler Expedition, and forty-five specimens of twenty-six species, from the United States and West Indies, were presented by the Museum of Comparative Zoology of Cambridge, Mass.

Forty-eight specimens of thirty-six species of fishes, mostly from the U. S. Atlantic coast, presented by E. D. Cope.

Six species of fishes, from Janira R., San Domingo, and one Flying-fish, were presented by Wm. M. Gabb.

The following were also presented: A salmon trout, from Hobart Town, Tasmania, by the Tasmanian Salmon Commission; several viviparous fishes, from Vancouver Isl., by A. C. Engard; two shad and an alligator Gar, from Ouchita R., Ark., by Dr. G. W. Lawrence; a *Lucioperca* and an *Amia*, by E. D. Cope; a *Platyrostra edentula* and *Megalops trissoides*, by the U. S. Fish Commission; a Lump fish, from Barnegat Bay, by D. M. Yost; a Tunney, from off Atlantic City, by R. Buckman; a Saury, from the same locality, by Geo. W. Bugbee & Co.; *Selene argentea*, *Alutera cuspidata* and *Carangus*, Squan R., N. J., by W. H. Dougherty; three species of fishes from the same river, by Jos. Willcox; *Mustelis canis* and *Anguilla*, Atlantic City, by Geo. W. Tryon, Jr.; *Engraulis*, by T. P. Parker; palatine teeth of drum fish, by J. F. Leaming; jaws of a fish, by Mrs. A. A. Crawford; and photograph and scale of the Tarpum, by R. Bridges and S. Powel.

A small collection of reptiles and fishes, from South America, was presented by Dr. C. Hering, and another collection from various localities was presented by Dr. F. B. Stevenson, U. S. N.

Articulates.—A small collection of insects, etc., from Port au Prince, Hayti, was presented by Thomas Bland; a small collection of crustaceans and spiders, by Dr. F. B. Stevenson, U. S. N.; a small collection of crustaceans, from San Domingo, by Wm. M. Gabb; a small collection of myriapods, from Iowa, by D. S. Sheldon through Dr. H. C. Wood; three *Scolopendra*, from Trinidad and Demarara, by Col. P. Figgelmesy; seven species of spiders, from Costa Rica, by Wm. M. Gabb; *Calappa convexa*, by Capt. L. D. Barrett; *Platyonychus ocellatus*, by G. W. Tryon, Jr.; *Alaus occulatus*, E. S. Whelen; *Polydesmus*, by J. O. Shimmel; a grasshopper, from Guayaquil, by C. S. Rand; larva of *Cuterebra*, from the skin of a rabbit, by Prof. J. Lawrence Smith; a beetle with fungus growth, by T. Pennington Conrad; and a hornet nest, by W. R. Jones.

Radiates and Protozoans.—A superb collection of thirty-seven corals, from Key West, Florida, presented by Wm. S. Vaux.

A fine collection of seventeen corals, presented by Clarence S. Bement.

Seventeen species of Echini, and a large Neptune's cup sponge, presented by Dr. Isaac Lea.

Six corals, from Samoan Islands, and one coral from Alaska, presented by J. M. Emanuel.

A Gorgonia and an Ophiura, and one hundred bottles of marine dredgings, etc. (including protozoans, radiates, annelides, crustaceans, mollusks, etc.) from the Pacific, presented by Dr. Wm. H. Jones, U. S. N.

A small collection of echinoderms in alcohol, from various localities, presented by Dr. F. B. Stevenson, U. S. N.

A coral, from Bermuda, presented by J. P. Hand; and an Echinus, *Hipponoë esculenta*, Caribbean Sea, presented by A. Duer, through Mr. Dougherty.

A fine large specimen of *Madrepora palmata*, from Turk's Island, was purchased.

There were also presented three sponges, from Turk's Island, by Wm. M. Gabb; and a Halicondria, from Egg Harbor Bay, N. J., by W. H. Dougherty.

Fossils.—A fine series of fossil foot tracks in slabs of red sandstone, together with a collection of remains of fishes, from the valley of the Connecticut, presented by Dr. Isaac Lea. To the same donor we are indebted for teeth and other remains of *Mastodon*, of *Ichthyosaurus*, etc.

A collection of fossils from the phosphate beds of Ashley R., S. C., consisting of vertebræ of squalodonts and cetaceans, the beak of a ziphioid cetacean, teeth of sharks, etc., was presented by Clarence S. Bement.

Portion of the femur of *Megatherium*, vertebra of *Squalodon*, teeth of *Equus major*, and dental plate of *Myliobates*, from the Ashley R. phosphate beds, presented by Mr. George T. Lewis.

Teeth and vertebræ of *Mosasaurus*, from Lumberton, Burlington Co., N. J., presented by Thomas Moore through Col. T. M. Bryan.

Three different small collections of shark's teeth and other remains of fishes and of reptiles, from the vicinity of Vincenttown, N. J., presented by Col. T. M. Bryan.

There were also presented the following: cetacean vertebra, from Ashley R., S. C., by S. Thayer Abert; tooth of *Mastodon andium*, from the Amazon, by Dr. Isaac T. Coates; cast of the lower jaw of the Cohoes *Mastodon*, presented by Prof. James Hall; remains of *Sphenosaurus clavirostris*, by S. S. Haldeman; do. of fishes from the mesozoic red shale of Montgomery Co., Pa., by Prof. Joseph Leidy; *Emys wyomingensis*, from Ft. Bridger, Wyoming, by Dr. J. Van A. Carter; tooth of *Carcharodon megalodon*, from Chesapeake Bay, by J. O. Schimmel; and coprolites, from Cambridgeshire, England, by Joseph P. Hazard.

Other fossils received by the Academy consist mainly of invertebrate remains.

Mr. Wm. M. Gabb, always a liberal donor to the Academy, as well as an active contributor to geological science, has presented the following collection:—

Sixty species of cretaceous fossils, mostly original types; 42 eocene fossils, from Texas, all original types; 31 miocene, 23 pliocene, and 85 post-pliocene fossils, of California, many original types; 42 species of post-pliocene fossils of San Domingo, and 72 pliocene fossils of Costa Rica. Mr. Gabb also presented 45 species of cretaceous fossils, most of which are described in his paper of November 7th.

Mr. Gabb further presented 225 specimens of 114 species of cretaceous fossils of India, being duplicate types of the "Palæontologia Indica," and labelled by Dr. Stoliczka.

Our venerable friend, member, and ever zealous student of natural history, Dr. Isaac Lea, has presented a collection consisting of 250 species of secondary and tertiary fossils, American

and European, and 14 South American cretaceous fossils, types of his paper in the Trans. Am. Phil. Soc., 2d ser., vol. vii. He has also presented a collection of 40 species of American and foreign palæozoic cretaceous and tertiary fossils.

A collection of forty-seven lower carboniferous fossils, and five others from the lower coal measures from Jefferson Co., Alabama, were presented by Dr. Wm. Gesner.

Three fine specimens of *Eurypterus remipes*, from the Waterlime group, near Buffalo, N. Y., presented by Tobias Witner, Esq., through Prof. S. S. Haldeman.

Twenty palæozoic brachiopods, from Huntingdon Co., Pa., were presented by John M. Hartman.

Forty-four devonian and silurian fossils, comprising brachiopods, corals, and a large slab of shale with a multitude of trilobites, etc., from Ontario, Canada, presented by Thos. Burnett.

Twenty species of cretaceous fossils, from New Jersey, and a collection of minute fossils, comprising many specimens and species, from the cretaceous limestone of Vincenttown, N. J., presented by Col. T. M. Bryan.

Of other invertebrates, the following were presented: a collection of shells from the Paris basin, etc., and encrinurites, by Dr. Isaac Lea; a collection of marl fossils from Vincenttown by Col. Bryan; cobble stone with *Scolithus linearis*, from drift, Washington, D. C., by Prof. Wm. B. Rogers; numerous *Amnicola galbana*, Sussex Co., N. J.; *Inoceramus* and another cretaceous fossil, from Texas; and *Inoceramus barabeni*, Selma, Alabama, by Prof. Haldeman; *Ammonites obtusus*, England, by Miss Mary Haig; coral, Luzerne Co., Pa., by E. K. Bryer; *Gryphæa vesicularis*, New Jersey, by W. H. Dougherty; *Avicula*, Munroe Co., Pa., by C. F. Parker; two Orthoceratites, Arkansas, by Dr. G. W. Lawrence; a new species of Nautilus from Vincenttown, N. J., by Col. Bryan; seven fossils from Hayti, by Thos. Bland; several from New Jersey, by Mr. Gabb; and a Gryphæa and an Ammonite from Hemstead Co., Ark., by Dr. Geo. W. Lawrence.

Of fossil plants, Dr. George W. Lawrence, Arkansas Commissioner, presented two large silicified trunks, measuring each upwards of four feet in length and a foot in diameter, from Hot Springs Co., Arkansas. Dr. Isaac Lea presented nine fossil plants, and Dr. Lawrence one coal plant from Arkansas.

Minerals.—Among the most interesting of the minerals

given to the Academy, is a collection of fifty-six specimens of Ozocerite and the associated rock strata, from Boryslaw, Carpathian Mountains, Galicia, presented by Paul Dobel through Dr. F. Migerka, Austrian Commissioner.

A crystal of Barytes, sixty pounds weight, from Dufton, Cumberland, England, was presented by Wm. S. Vaux. The following were also presented by the same gentleman: a large crystal of Apatite, from Burgess, Canada; Anglesite, Phoenixville, Pa.; Brown Tourmaline, Gouverneur, N. Y.; Apophyllite with Analcime; and Datholite, from Bergen Hill, N. J.

Dr. Isaac Lea presented the following: one hundred specimens of rocks from Scotland; thirty-seven do. from a coal shaft, England; forty do. from the route from Cruces on Chagres R. to Panama; eight additional rock specimens; thirty-five coprolites and septaria from near Edinburgh; a mass of mesozoic conglomerate, Plymouth, Montgomery Co., Pa.; Clinocllore in Chlorite, from Chester Co., Pa.; Magnetite, from Tilly Foster Mine, N. Y.; and a specimen of silicified wood. Dr. Lea also deposited an iron meteorite, weight two hundred and fifty-four pounds, from the mountains of East Tennessee.

Mr. Joseph Willcox presented collections consisting of two Rutiles, Georgia; two Apatites, Canada; Sulphur, Nevada; four Houghite, Strontianite, all St. Lawrence Co., N. Y.; Emerylite, Cyanite, N. Carolina; Pyrophyllite, S. Carolina; Tremolite, Conn.; Hornblende, N. J.; Tourmaline, three Anthophyllite, Del. Co.; two Actinolite, Fibrolite, Deweylite, Chester Co.; Mesolite, Nova Scotia; Zoisite, Ducktown, Tenn.; Pyrite, Columbia Co.; Tachylite, Nova Scotia; and Pyrophyllite, N. Carolina.

A fine specimen of Fire Opal, from Zimapan, Mexico, was presented by Prof. Mariano Bárcena.

A collection of minerals from Arkansas, consisting of Quartz and its varieties, Arkansite, Rutile, Schorlamite, Garnet, Magnetite, etc., was presented by Dr. Geo. W. Lawrence.

Fifty-nine rocks and minerals of Brazil, presented by Dr. J. M. da Silva Coutinho, Secretary of the Brazilian Commission.

A collection consisting of Sussexite, Jeffersonite, Røepperite, and Calamine, from Franklin, Sussex Co., N. J.; Unakite, North Carolina; Copper, Lake Superior; Dendrites in shale; and eight Hematites and Limonites, Michigan, presented by John M. Hartman.

Two Satin-spars, England ; Gypsum, Michigan ; a collection of rocks, mostly fragments of boulders, eleven other rocks ; two calc-tufas, and five fragments of glacial polished rocks, from Niagara, presented by Thomas Burnett.

Of other minerals, there were presented the following:—

Manganite, Ihlfeld, Hartz ; Aragonite, Herrngrund, Hungary ; two Arkansites, and a Rutile, Magnet Cove, Ark., presented by C. S. Bement. Vivianite, from Vincenttown, N. J., by Col. T. M. Bryan. Diaspore, from near Unionville, Chester Co., by T. F. Seal. Cassiterite, Durango, Mexico, by S. C. Bruce. Peat, Ireland, by Mary Mulholland. Two phosphatic nodules, Ashley R., S. C., by Geo. T. Lewis. Mullicite, Mullica Hill, N. J., by T. D. Rand. Native Mercury, Cal., by Dr. T. H. Streets. Strontianite, Mifflin Co., Pa., by H. C. Lewis. Serpentine, Harford Co., Md., by Wm. Struthers. Four topazes, Bass' Straits, by Miss Hull. Copper, Lake Superior, by B. A. Hoopes. Eleven iron ores, Alabama, by Dr. Wm. Gesner. Sixteen iron ores, Bohemia, by W. Nedwied & Son, through Dr. F. Migerka. Magnetic iron, Costa Rica, by W. M. Gabb. Three Graphites, Canada, by the Plumbago Co., Ottawa, Canada. Stibnite, Blende, Galena, Chalcopyrite, etc., Arkansas, by W. E. Powell. Gypsum and Kaolin, Ark., by Thomas Essex. Sphene and casts of crystals, Chester Co., Pa., by W. H. Forwood, M.D. Two Calcites, Montana, by V. E. Cline and P. Barhite. Celestine, Blair Co., Pa., by Rev. H. C. McCook. Four auriferous Quartzes, Chalcopyrite and Garnet, Siberia, by Dr. S. H. Linn. Halloysite, Indiana, by Mr. Dougherty. Halloysite, N. Y., by E. Goldsmith. Fichtelite, Bavaria ; and four rocks from Lehigh and Delaware Co., by Dr. Leidy. Seven minerals, Australia, by J. M. Emanuel. Rose chalcedony, California, by W. H. Dougherty.

There were also purchased : Hornblende, from Edwards, N. Y., Heulandite, Iceland ; Garnet, Chester Co., and a fine crystal of Amazon stone, Pikes' Peak, Colorado.

Ethnological and Miscellaneous.—A collection of American Indian stone relics, from Arkansas, was presented by Dr. G. W. Lawrence.

A collection of ten pieces of pottery, etc., from Nicaragua, was presented by Dr. J. H. Bransford, U. S. N.

Twelve pieces of pottery, from Peru, and three pieces of tapa cloth from Hawaii, etc., presented by Dr. W. S. W. Ruschenberger.

In addition, the following were presented :—

A fossil tooth of *Carcharodon magalodon*, artificially shaped into an Indian implement, taken with stone relics, etc., from a shell heap at Cedar Keys, Florida, by R. M. Smith. Rope, mat, and paper, from the Samoan Island; native sword, fans, etc., from Fiji Isle, and opium pipe, from China, by J. M. Emanuel; several arrowheads and chips, from shores of Delaware; an arrowhead from Tennessee, and a pestle from New Jersey, by Dr. I. Lea. An Eskimo ice-pick, by Prof. S. S. Haldeman; stone hatchet and arrowhead, Glassboro, N. J., by Charles Berry; an arrowhead from Ohio, by T. C. Heighway; and a peculiar stone relic, by Mr. Trimble.

Dr. R. M. Bertolet deposited a collection consisting of one hundred and eighty-two arrowheads, two axes, one chisel, etc., besides forty-six specimens consisting of axes, pestles, pottery, carved pipe bowl, etc.

Respectfully submitted by

JOSEPH LEIDY,
Chairman of Curators.

REPORT OF RECORDER OF BIOLOGICAL AND MICROSCOPICAL SECTION.

The extraordinary demands upon the time, attention, and resources of Philadelphia physicians, throughout the centennial year, consequent upon the meeting in this city of the International Medical Congress, the American Medical Association, and the Pennsylvania State Medical Society, have seriously interfered with the prosecution of scientific research among our members during the past twelvemonth. On the other hand, however, by way of compensation, the presence of representative scientists from all parts of the world in attendance upon these conventions and on the Centennial Exhibition itself, has not only rendered the discussions at our meetings of the section more interesting and instructive, but has enabled us to give on the 16th of October last, by far the most successful microscopical exhibition and conversation that has ever been organized in this city.

As remarked by the editor of a well-known Journal of Microscopy in concluding his account of the exhibition: "Altogether the meeting was a most pleasant and instructive one. It brought